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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/675,572	09/30/2003	Gerald W. Gibson JR.	Gibson 12/075903-208	9966

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BEUSSE WOLTER SANKS MORA & MAIRE, P. A.  
390 NORTH ORANGE AVENUE  
SUITE 2500  
ORLANDO, FL 32801

EXAMINER

TOLEDO, FERNANDO L

ART UNIT	PAPER NUMBER
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2823

DATE MAILED: 10/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/675,572

Applicant(s)

GIBSON, GERALD W.

Examiner

Fernando L. Toledo

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 02 August 2006.  
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 21-30 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 21-30 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☒ The drawing(s) filed on 09 February 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application  
6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 21 and 23 – 30 are rejected under 35 U.S.C. 102(b) as being anticipated by Jerbic (U. S. Patent 5,500,076 A).

3. In re claim 21, Jerbic, in the U. S. Patent 5,500,076 A; figures 1 and 2 and related text discloses a first optical device for producing a first signal representative of an actual etchant gas concentration, wherein the first signal is based on an emissive spectral line for the etchant gas (Column 3, Lines 26 – 45); a second optical device for producing a second signal of an inert gas concentration, wherein the second signal is based in an emissive spectral line for the inert gas, wherein the emissive spectral line for the etchant gas and the emissive spectral line of the inert gas exhibit similar cross-section for excitation (Columns 3 and 4, Lines 39 – 41 and 50 – 65; respectively); an element for relating the first and the second signals to produce a normalized etchant gas concentration signal (Column 4, Lines 10 – 19); a comparing element for comparing the normalized etchant gas concentration signal with a signal representing a desired constant etchant gas concentration to maintain a consistent etch trim rate within the chamber and a determinable etch trim duration, after which the etch trim process is terminated, the comparing element for producing a normalized signal (Column 3, Lines 10 – 15); provided to the first mass

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flow controller for providing a substantially constant etchant gas concentration (Columns 5 and 6, Lines 64 – 67 and 1, respectively).

4. In re claim 23, Jerbic discloses wherein the inert gas includes argon (Column 3, Line 58).

5. In re claim 24, Jerbic discloses further including an energy source for forming a plasma in the etch chamber (Column 4, Lines 25 – 27).

6. In re claim 25, Jerbic discloses wherein the first signal includes a first signal representative of a spectral emission line formed by the etchant gas interacting with the plasma (Column 3, Lines 26 – 33).

7. In re claim 26, Jerbic discloses wherein the second signal includes a second signal representative of a spectral emission line formed by the inert gas interacting with the plasma (Column 3, Lines 50 – 57).

8. In re claim 27, Jerbic discloses wherein the element for relating the first and second signals includes a divider (Figure 2).

9. In re claim 28, Jerbic discloses wherein the first optical device comprises in serial relation, and optical fiber disposed to receive light energy from within the etch chamber, an optical filter and a light detector for producing the first signal (Column 3, Lines 26 – 33).

10. In re claim 29, Jerbic discloses wherein the second optical device includes in serial relation, an optical fiber disposed to receive light energy from within the etch chamber, an optical filter and a light detector for producing the second signal (Column 3, Lines 51 – 57).

11. In re claim 30, Jerbic discloses wherein the first and second optical devices are responsive to a bifurcated optical fiber disposed within an opening in the etch chamber and responsive to spectral emissions in the etch chamber, wherein the optical fiber carries an optical

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representative of the actual etchant gas concentration and the inert gas concentration (Column 4, Lines 10 – 19).

***Claim Rejections - 35 USC § 103***

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Jerbic in view of Applicant's Admitted Prior Art (AAPA).

14. Jerbic does not disclose that the etchant gas includes an oxygen radical. However, Jerbic discloses that the disclosed device can be used in any plasma-enhanced process, including plasma etch (Column 4, Lines 25 – 27).

AAPA discloses a conventional plasma etching process wherein the etchant gas includes oxygen radicals (page 3, paragraph 0007).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the device of Jerbic with the process of AAPA, since the device of Jerbic obtains a ratio of reactant gas and inert gas that indicates the concentration of consumable reactant in the chamber which would be relatively free of noise (Column 3, Lines 26 – 33).

***Response to Arguments***

15. Applicant's arguments filed 2 August 2006 have been fully considered but they are not persuasive for the following reasons.

16. Applicant contests that Jerbic does not teach, disclose or suggest an etch trim process, or that the gas concentration is constant in the chamber.

Examiner respectfully submits that Jerbic does show that the gas concentration is constant in the chamber, particularly in column 2, lines 40 – 48:

The concentration of the reactant or reactants in the plasma processing chamber is then maintained in the chamber by adjusting the flow of such reactant or reactants into the chamber based on sensed changes in such ratio based on such continuous quantitative monitoring of the both the concentration of the reactant or reactants and that of the non-reactive (non-changing concentration) component.

Examiner also submits that the etch trim is disclosed by Jerbic in column 5 and 6 lines 65 – 67 and 1 as explained above, although Jerbic does not use the term “etch trim” however, it is understood by the context of the teachings of Jerbic.

***Conclusion***

17. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

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CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Fernando L. Toledo whose telephone number is 571-272-1867. The examiner can normally be reached on Mon-Fri 12pm-7:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Smith can be reached on 571-272-1907. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



FToledo  
16 October 2006



Michelle Estrada  
Primary Examiner  
Art Unit 2823